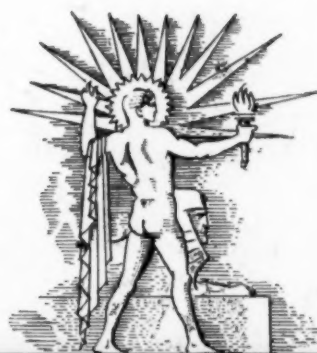


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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



June 20, 1942

Gem-Sepulchred

See Page 390

A SCIENCE SERVICE PUBLICATION

Do You Know?

A cyclone may travel a thousand miles a day.

Very green asparagus is a good source of vitamin A.

The seas contain enough salt to cover the dry land 400 feet deep.

Camouflage netting is now being made by a lingerie manufacturer.

Phenol, useful in making high explosives, is also a number one antiseptic.

Avocado oil may soon take the place of hard-to-get imported oils in cosmetics.

Automobile graveyards yielded 350,000 tons of scrap metal during the month of April.

One quart of whole milk is approximately equal in food value to five ounces of American cheese.

Iron ore shipments on the Great Lakes for the four months ending May 1 reached a new all-time high of 8,581,740 gross tons.

American mothers: rubber used in one month's manufacture of baby pants can make 2,800 life-rafts for ocean-prowling U. S. war planes.

In general, reduction of weight through dehydration results in one pound of the dehydrated product equaling about 11 pounds of fresh vegetables.

Question Box

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PUBLIC HEALTH

What new evidence is there that respiratory diseases may spread through the air? p. 393.

What proportion of men are rejected by the Army Induction Boards for stomach ulcer? p. 394.

RADIO—PSYCHOLOGY

How can you learn radio code very quickly? p. 388.

Americans own 57,000,000 radio sets in 30,000,000 homes.

A modern airplane requires seven to twenty miles of electrical wiring.

All glue used for aircraft in England now comes from bones saved in British kitchens.

About 60,000 tung trees, from which the valuable oil is obtained, are now under cultivation in South Africa.

A physician's prescription is necessary in Norway to obtain galoshes.

The original stethoscope was a paper tube made by the French doctor Laennec.

As little as 30% under-inflation will cut one quarter from the life of a tire.

Dried lawn mowings, riddled and placed in a slow oven, then broken down to meal, can be used for poultry feed.

SCIENCE NEWS LETTER

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MEDICINE—EUGENICS

Nearsightedness Could Be Wiped Out By Eugenics

Marriage of Two Nearsighted People Should Be Avoided, Medical Association Is Told; Germans Suffer Defect

NEARSIGHTEDNESS could be eliminated, bred out of the human race, by banning marriages between nearsighted people, Dr. Lawrence T. Post, of St. Louis, declared at the meeting of the American Medical Association in Atlantic City.

The large number of nearsighted Germans today is probably due to the fact that such eugenic mating was not practiced in Germany, he said.

"There is little evidence to show that this is anything but an hereditary defect and is handed down just as other physical characteristics are," Dr. Post stated.

Even if complete eugenic mating cannot be achieved, it may at least be possible, he said, to prevent the marriage of two people afflicted with extreme nearsightedness.

Besides eyeglasses to correct the nearsighted condition, Dr. Post advised the following treatment for the nearsighted child: "a well-rounded diet with a quart of milk or its equivalent in calcium each day; maintenance of a good posture, especially not stooping when reading, in which position the eye hangs by the optic nerve almost unsupported, as a grape from its stem; a good light, work at not too close a distance from the eyes, and if general examination indicates it, adequate dosage of thyroid."

Science News Letter, June 20, 1942

Vaccinate Mothers

NEW-BORN babies can be protected from whooping cough by vaccinating their mothers during the last three months before the babies are born, Dr. Philip Cohen and Dr. Samuel J. Scadron, of New York, announced.

"Whooping cough is the dread contagious disease of infancy," they declared. During the first two years of life it is the cause of more deaths than measles, diphtheria, infantile paralysis and scarlet fever combined."

Babies are usually born with an endowment from their mothers of immunity against these latter diseases, the immunity lasting about six months.

Against whooping cough, however, they have no such protection and efforts to make them resistant by vaccination early in life have been unsuccessful.

Apparently the new-born baby is not capable of producing antibodies against whooping cough, even under the stimulus of vaccination. But if his mother is vaccinated before his birth, defensive forces against whooping cough which develop in her blood are transferred through the womb to the baby.

Science News Letter, June 20, 1942

Retards Mental Growth

THE IMPORTANCE of this new method of protecting new-born babies from whooping cough by vaccinating their mothers was emphasized by

the report that when this disease attacks a very young baby, it may prevent his normal mental and personality development.

More than half of a group of 58 children who had had whooping cough before the age of two years showed "definite behavioral, intellectual and personality changes later in life, apparently as a direct result of this infection," Dr. Louis A. Lurie and Dr. Sol Levy, of Cincinnati, reported.

In most cases, the attack of whooping cough occurred between the third and seventh months of life but the children were first brought to the Child Guidance Home at the ages of 10 and 11 years.

Besides the behavior problems, ranging from incorrigibility to behavior indicative of mental disease, below-average intelligence was found in 24 of the 58 children and 10 were definitely feeble-minded. This amount of subnormal mentality is much greater than in the entire group of children at the Child Guidance Home.

Dr. Lurie stated that in all probability the changes found "are due to definite organic lesions (injuries) produced in the brain during the attack of whooping cough."

Science News Letter, June 20, 1942



DEADLY

The new Flying Fortress, the Boeing B-17E, is described by the War Department as "bigger and more deadly" than any previous Flying Fortresses. Armament includes heavy caliber power turrets on top and bottom of the fuselage, tail "stinger" and side guns.

Babies Acquire Tolerance

BABIES of cigarette-smoking mothers apparently develop a tolerance to nicotine before they are born and are not affected by the nicotine that gets into the milk of all smoking mothers. Studies showing this were reported by Dr. H. Harris Perlman, Dr. Arthur M. Dannenberg and Nathan Sokoloff, of Philadelphia.

The quantity of nicotine that would produce poisonous effects in an infant is not known, the Philadelphia scientists

pointed out to the Medical Association.

The first poisonous symptoms from nicotine, it has been shown, appear after the intake of one to four milligrams. The actual amounts of nicotine obtained in a feeding by the infants in the study were practically all below the poisonous threshold.

No reduction in supply of milk was found in the 55 mothers who had all smoked before their babies were born and continued to smoke within two days after confinement.

Science News Letter, June 20, 1942

ETHNOLOGY

Japanese "Book of Genesis" Basis of Claim to Supremacy

Fantastic Story of Japanese Origin Traces Family Beyond Sun Goddess for Several Generations

UTTERLY FANTASTIC, to an Occidental mind at least, are the complicated tales of the origins of the Japanese gods and the making and peopling of the Japanese islands told in the Japanese "Book of Genesis," *Ko-Ji-Ki*, several copies of which are in the Smithsonian Institution. But fantastic as they are, these stories form the ultimate basis for Japanese claims to world supremacy through divine origin of their race. Usual accounts of the Japanese divine-origin myth start with the Sun Goddess. This old book, however, goes back of that by several divine generations. It starts out with a description of the birth of the first gods:

"The names of the deities that were born in the Plain of High Heaven when the Heaven and Earth began were the Deity Master-of-the-August Center of Heaven, next the High-August-Producing-Wondrous Deity, next the Divine-Producing-Wondrous Deity. These three Deities were all Deities born alone, and hid their persons."

After several generations of such deities, we come to a god and goddess who were brother and sister, and also husband and wife. Their names were Male-Who-Invites and Female-Who-Invites. They made an island named Onogoro by stirring the sea with a magic jewelled spear; the island formed from the drippings when the spear was lifted out of the water. Living on this island, they had children who are the various

islands of Japan, and others who are Shinto gods.

In giving birth to Fire-Shining-Elder, the god of fire, the goddess died, and descended into the Under-World. Like Orpheus, her husband-brother sought to obtain her return, but failed. He fled, pursued by a motley horde of demons.

When he escaped to the upper world, the god bathed in a stream to purify himself, and as he did so, new gods were born of all his garments and of various parts of his body. The Sun Goddess came from his right eye. One of her children, of whose legitimacy she had some doubts, was a certain Jim-mu Teno, first emperor of Japan.

Of particular interest to students of comparative religion is the fact that this exceedingly primitive account, rivalling for foggy inconsequentiality even the Nibelungen myths of ancient Germany, was not put in writing until the year 712 A.D., by which time such philosophical and religious teachers as Confucius in China, and Plato, the Hebrew prophets and Jesus of Nazareth in the West, had for centuries been the subjects of highly intellectual commentaries by some of the most acute scholars the world has ever known.

Science News Letter, June 20, 1942

A waxy corn, to replace decreasing imports of tapioca, can be put into commercial production in the U. S. corn belt by 1943.

RADIO—PSYCHOLOGY

For Speed in Learning Code, Cut Out the Dots and Dashes

HERE is a tip that will help you learn radio code in a hurry if you are training for one of the thousands of radio jobs Uncle Sam needs to fill right away. It comes from George W. Bailey, chairman of the radio section of the National Research Council's Office of Scientific Personnel.

Don't think of the words "dot" and "dash" in trying to learn the code letters. Don't think of any words or written signs.

Code is a language of sound only. The way to learn it is to listen to the sound of code as it is tapped out on a buzzer or on the radio (it is used a little in commercial broadcasts to introduce programs and in other incidental ways). If you have no buzzer, get somebody to whistle it to you, or whistle it yourself. Learn to take it down directly on a typewriter if possible.

Because it is impossible to put down on a printed page the sound of a buzzer key or even the most expressive whistle, radio men use for the letter "a" the syllables "ditdah." The "dit" is clipped and the "dah" held about three times as long. The victory symbol, if written, would look like "dididitdah."

The speed of this sound letter should be just the same whether the transmission speed is 10 words a minute or 30 a minute. To go slow, make more space between letter sounds and lots of space between words.

When you have learned these two principles—that letters are sounds and speed is governed by space between sounds,—you are over the hump of learning code.

Your next step is to suddenly realize that short words like at, in, on, the, and, etc., are sounds by themselves and you can recognize them as such. You will be astonished to find that you can listen to high speed code and pick out these small words. You are then on your way to being an expert.

But in learning code for speed, don't slow yourself up by bothering with any sort of way of writing the code sounds, Mr. Bailey warns. On the job, you don't have to write out code symbols. You have to know them when you hear them.

Science News Letter, June 20, 1942

Heat, light and oil or grease are the chief enemies of rubber.

MEDICINE

Talcum-Powder Operation Aids Heart Disease Victims

Simple Task for Surgeon Stops Pain Within Few Hours And Allows Patients To Return to Work in Few Weeks

A NEW source of manpower for the war effort may be tapped by an operation that successfully uses talcum-powder to put new blood into sick hearts and gets helpless heart disease patients back to health and useful work.

The operation was announced by Dr. Samuel A. Thompson and Dr. Milton J. Raisbeck of New York Medical College, at the meeting of the American Medical Association in Atlantic City.

The talcum powder, two teaspoonfuls of it, is put into the space between the heart muscle and its outer envelope, called the pericardium, in an operation so simple, Dr. Thompson said, that any surgeon can perform it in 20 to 25 minutes.

Within a few hours after the operation, patients are free of the torturing pain of angina pectoris and within six weeks are back at work. The improvement is apparently permanent. The first patient given the new operation has remained well for three years and seven months.

Marked improvement followed the operation in eight of the first 14 patients and moderate improvement in two more. The four who died would never have been operated on in the light of present knowledge, Dr. Thompson said, as their heart condition was too bad for them

to stand the operation. All these first 14 patients were so helpless and tortured by the pain of their heart-trouble that they were "sitting waiting to die," although they were still under 50 years of age and one was in the thirties. When the operation is used on patients who have not yet reached this hopeless last stage of heart-trouble, the results will be even better, Dr. Thompson believes.

The patients who can be helped by the new operation are those whose hearts are being starved for blood and oxygen because the arteries supplying the heart muscle are either plugged by blood clots (coronary thrombosis) or so hardened or pinched by spasm that no blood can get through. The lack of blood supply is what causes the pain of angina.

The talcum powder remedies this condition by causing a "tremendous" inflammation. First result of this is dilatation of the blood vessels and greatly increased supply of blood to the heart muscle. This immediately relieves the angina pain. The lasting improvement comes because after the inflammation the sac surrounding the heart is firmly stuck to the heart muscle, with no space in between. In this heart-sac are half-a-dozen arteries which, following the inflammation, start growing into the heart muscle, bringing it new blood to keep

it nourished for its job of pumping blood to the rest of the body.

Studies in animals before operating on patients showed that only talcum powder would cause this permanent and beneficial adhesion between the heart and the pericardium.

Science News Letter, June 20, 1942

ENTOMOLOGY

Hyacinths To Be Killed Because They Aid Wigglers

BECAUSE one pesky mosquito species has adopted U-boat tactics during its larval or "wiggler" stage of existence, thousands of acres of water hyacinth that float on Florida rivers and lakes will have to be destroyed, regardless of difficulty or expense.

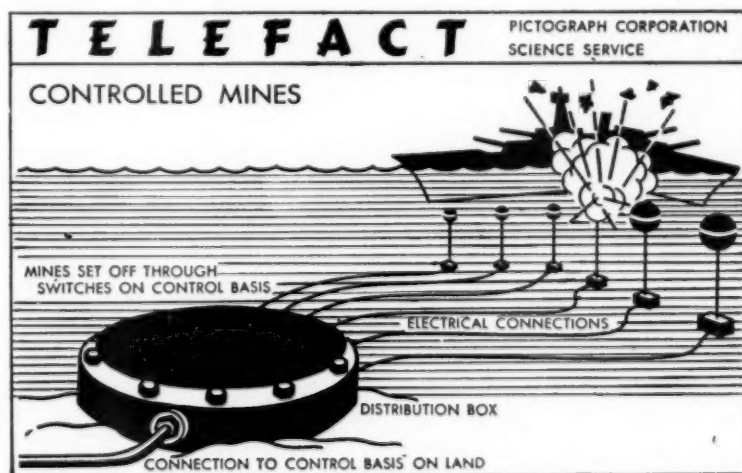
The mosquito in question is a night-biting pest, that disturbs the slumbers of aviation cadets, soldiers, sailors and war workers in scores of military centers that have sprung up in Florida. Entomologists know her as *Mansonia perturbans*; she has no common English name—although doubtless her victims invent numerous ones under the stimulus of her searching proboscis.

Edwin Seabrook, entomologist and technical adviser on mosquito control for Palm Beach and Martin counties, has found that *Mansonia* larvae, unlike those of most other mosquitoes, do not come to the surface to breathe. Instead, they bore into the hollow, air-filled bulbs that serve as floats for the water hyacinth, and get their air in that way. They also drill into the hollow stems of cattails and water lettuce.

This trick keeps them safely beneath the level of suffocating oil spread on the surface, which dooms top-breathing mosquito "wigglers." The only way to abate these pests is to destroy their semi-submerged air reservoirs in the stems of aquatic plants.

Use of the hollow floats of the water hyacinth by this mosquito species is interesting, for it represents an adaptation to a relatively new element in the environment. Water hyacinth is not a native plant; it was introduced from abroad many years ago because of its beautiful violet flowers, and has now spread until it clogs navigation on many Southern streams and lakes. Navigation channels are kept open at considerable cost, but until now it has not seemed worth while to undertake really large-scale destruction of the weed.

Science News Letter, June 20, 1942



MEDICINE

New Attack on Paralysis Promised By Experiments

Physicians Are Shown What Is Probably Best Microphotograph Ever Taken of the Motor Nerve End

FUNDAMENTAL attack on infantile paralysis and other paralytic diseases and on those ailments like myasthenia in which the patients cannot move their muscles may result from experiments by Dr. Eben J. Carey and Leo C. Massopust, of Marquette University School of Medicine, Milwaukee, which have won the American Medical Association's gold medal.

These scientists showed what is probably the best microscopic picture ever taken of the motor nerve end plate, that is, the very end of a muscle-moving nerve at its point of attachment to the muscle fiber it stimulates to contract. The picture, revealing to doctors details which the textbooks said existed but which few doctors or medical students ever could see, was taken of the tiny motor end plate of the muscle between the ribs of a white rat.

In a starving animal, the Milwaukee scientists found, the nerve fibers between the muscle fibers expand and finally lose their grip on the muscles. The expansion of the nerve results because the nerve chemicals which stimulate muscles are not being delivered to the muscles for some still unknown reason related to starvation. This leads to extreme restlessness and over-irritability of the nerve. Next, when the nerve has become detached from the muscle fiber, the latter contracts and relaxes aimlessly, seen in twitchings of the face and eyelid in the starving person.

Since the motor nerve end plate will make the muscle contract or expand and thus produce useful muscle motion, as a result of stimulation of the nerve, the investigative method developed by the Milwaukee scientists should be useful for testing the action of various medicines that might remedy paralytic conditions and muscular diseases.

The stripes of striped muscles, which are the kind you have in your arms and legs, are not always the same but result from various types of stimulations, Dr. Carey thinks. He has been able to produce, in a capillary tube of chemicals

in gelatin, stripes exactly like those seen in striped muscles. Varying the chemicals changes the width of the stripes or produces double or spiral stripes like those in muscles. The stripes in the muscles, he believes, represent the periodic energy changes that go on in muscle metabolism which involve chemical reactions.

The A.M.A. silver medal was awarded to Dr. Deryl Hart and Dr. Samuel E. Upchurch, of Duke University, for their exhibit on sterilizing air in operating rooms by ultraviolet, and the bronze medal went to Dr. Oscar V. Batson, University of Pennsylvania, for his exhibit showing that cancer spreads by the vertebral veins.

Science News Letter, June 20, 1942

ENGINEERING

Ship Protection Program Outlined by Chemist

FOUR-FOLD protection against gas hazards, fire, accidents, sabotage and other emergencies is required for wartime shipyard operation, John M. Techton, chief chemist, Sun Shipbuilding Company of Chester, Pa., told the Greater New York Safety Council's 13th annual convention.

When a ship enters the yards for repairs, he said, she must first be thoroughly inspected for gas lurking in compartments or tanks. Signs and guards must be posted to keep workmen away until the ship is proved gas-free.

Next, inflammable materials are removed. Chief fire hazard, he said, is cork insulation, while cork dust is as dangerous as dynamite, due to the speed with which it spreads fire. Paint lockers, engine and boiler-rooms, bilges, manila rope lockers, carpenter shops, and store-rooms are fire hazards.

In repair of ships carrying ammunition, Mr. Techton urged that the explosives be located, then marked or guarded, or moved to safe storage.

General safety precautions demand immediate connection of fire lines when

a vessel arrives in the yard, maintenance of pressure for fire lines from shore, installation of fire extinguishers on board, proper marking of all fuel tanks, making gas masks easily available, and careful and early inspection by trained safety men to eliminate all hazards before work begins.

Prevention of sabotage requires constant alertness, and prompt investigation of all unusual accidents. Mr. Techton said yard organization for emergencies was similar to civil defense, the yard being in effect a community of 16,000 to 20,000 people. For their protection some 1,600 men as air-raid wardens, auxiliary firemen and guards, first-aid and maintenance squads are needed.

Science News Letter, June 20, 1942

PALEONTOLOGY

Amber-Entombed Ants Resemble Living Species

See Front Cover

EVEN Pharaohs of ancient Egypt cannot boast of the funereal glory—or the antiquity of sepulture, for that matter—that was unwittingly and unwillingly achieved by thousands of humble insects that lived in the conifer forests of the Baltic region in Oligocene time, some 40 million years ago. For whereas the dead kings and queens may have their sarcophagi crusted with gold and studded with gems, an ant-in-amber is actually entombed within a gem.

The ant pictured on the front cover of this issue of the *SCIENCE NEWS LETTER* is closely related to the Argentine ant, of recent years introduced into the United States and now a major pest in southern states, states Prof. C. T. Brues, Harvard University entomologist. Some of the amber ants belong to extinct genera and a number are related to forms now occurring in the Indo-Malayan region.

"Some of the Baltic amber ants," Prof. Brues adds, "are very closely related to living species, and the very abundant *Formica flori* is almost indistinguishable from *Formica fusca*, which is now one of the commonest ants in Europe and North America."

Ants and other insects are found embedded in amber because their last act in life was to step on sticky gum oozing from the trunks of trees. Overflowed with more gum, they perished and their bodies were preserved while the sticky stuff, buried in the shore ooze, hardened through the ages into the fossil resin we know as amber.

Science News Letter, June 20, 1942

MEDICINE

Treatment Saves Sub Victims From Loss of Feet or Legs

"Immersion Foot," Similar to Frostbite, Affects Men Adrift in Sea Even in Warm Florida Waters

RESCUED victims of submarine or other sinkings, who have been adrift on the seas in open rafts or life-boats, might be saved the subsequent loss of toes, feet and even legs by a treatment presented by Dr. J. Ross Veal and Dr. Roy G. Klepser of Washington, D. C., at the meeting of the American Medical Association in Atlantic City.

These shipwrecked mariners often suffer a condition known as "immersion foot." The blue, cold and painful condition may extend halfway up to the knee. It results from exposure to cold and damp without enough exercise to keep up the blood circulation. Actually it is the same as frostbite, though it afflicts men shipwrecked in the warm gulf stream waters off Florida as well as those shipwrecked in the icy waters off the New England coast. Frostbite does not mean freezing, Dr. Veal declared, citing many cases of frostbite of toes and feet seen in even as mild a climate as that of the District of Columbia. The condition may occur when the outside temperature is as high as 50 degrees Fahrenheit. This temperature, however, is still enough below the body's normal temperature of 98 and 6/10 degrees to constrict the arteries carrying blood to the feet, hands, and other exposed parts of the body unless counteracted by exercise to stimulate circulation.

In civil life, the frostbite condition very often follows an alcoholic spree. Experiments with rats showed, Dr. Veal reported, that when enough alcohol is drunk to put the rat, or man, "out" the frostbitten condition will occur even at mild temperatures, particularly if there is exposure to dampness.

The treatment which might save the feet or legs of shipwrecked mariners, as it is now saving frostbitten feet of people in civil life, is an operation in which the sympathetic nerves to the affected part are permanently disconnected. These nerves regulate the contraction of the blood vessels. By cutting them, the blood vessels are put into a state of dilatation instead of contraction. As a result, there is no check to the blood flow.

Gangrene is prevented and the toes, foot or leg are saved. These can be saved by proper treatment even as long as six days after exposure if permanent damage to the tissues has not occurred. First treatment for a person with the frostbite condition is to warm him all over by blankets, hot-drinks, and even whiskey. Great care must be taken, Dr. Veal emphasized, to warm the affected parts very gradually.

Science News Letter, June 20, 1942

NUTRITION

Frozen Foods With Flavor Produced By New Method

A NEW quick-freezing machine that freezes foods four times as fast as the fastest previous methods, that keeps the flavor in and provides a protective coating on the food, has been developed by research at the University of Texas. This was announced by Prof. W. R. Woolrich and Luis H. Bartlett of the University of Texas to the American Society of Mechanical Engineers.

Foods, to retain their freshness and flavor, must be so quickly frozen that no chemical or physical changes occur during the process.

"Many cases are on record," the scientists said, "of products which have been frozen by methods that required as much as a week for complete solidification, yet they were labeled 'quick frozen'."

After investigating thoroughly the causes of damage to foods by slow freezing, and studying all existing commercial procedures, the scientists developed their own method which they call polyphase or flash freezing. It is a modification of the immersion method in which the food is floated on a thick chilled syrup or brine. This is a very fast method and was found by the research divisions of the Tennessee Valley Authority to give exceptionally good results for berries, peaches, vegetables and fish. For fish, the salt solution is used.

The modification introduced in the polyphase method is seemingly slight—

but it makes a great difference. The solution, of sugar or salt, is so adjusted as regards temperature and concentration that it contains all three states of matter, the solid, liquid and vapor states. These states the chemist calls phases. Hence the term "polyphase."

As the liquid is cooled and slowly agitated, minute crystals of ice are formed and thoroughly distributed throughout the liquid. These ice crystals so increase the heat conductivity of the mixture that heat is carried away from the immersed food twice as rapidly as by any other fluid at the same temperature.

The polyphase mixtures can be used at temperatures from minus 2 to minus 10 degrees Fahrenheit. Syrups used in food freezing are seldom operated below plus 3 degrees. The investigators found that with a polyphase composition at minus 10 degrees, the freezing was four times as fast as with an ordinary syrup at plus 1.5 degrees.

Freezing is in fact so fast by the new method that juices adhering to the food surfaces are at once frozen, forming an ice coating that keeps the juices and the flavors in. After the fruits or vegetables are fully frozen and removed from the machine, they are dusted over with a small amount of dextrose. This changes the ice coating to a plastic material that adheres tightly to the food and preserves it perfectly.

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ENGINEERING

Rubber Off the Roads Could Be Salvaged

ENOUGH rubber can be scraped up from the streets of our cities to make a significant contribution to the retreading material for our tires, according to Dr. Carl Omeron of Los Angeles. He made the experiment of scraping up and weighing rubber from the streets of his native city, and estimated that at least one pound of rubber wears off from each tire on the city streets and highways in a year. This rubber is found principally at boulevard stops and on curves.

In Los Angeles, there are 1,000,000 registered motor vehicles. These should leave about 4,000,000 pounds of rubber on the streets each year. Dr. Omeron estimates that one-fourth of this could be recovered. He suggests the scraping be done with large wire brushes attached to motorized sweepers, and says the rubber can easily be separated from the oil, tar and other residue scraped up with it.

Science News Letter, June 20, 1942

AERONAUTICS

New German Plane Called "World's Oddest Airplane"

"WORLD'S oddest airplane." That is the mild British judgment on the weird design of a new German Blohm and Voss plane just coming into service with the Luftwaffe.

Although powered with only one engine, the plane has two nacelles. One holds the engine; the other—much shorter—looks like a sight-seeing side car, and is provided merely to insure a better view. To balance the one-sided craft, only half a tail plane is used.

For armament, this two-seated contraption has fixed guns in the nose and a cone turret in the tail. It will fly 220 miles per hour at 17,000 feet. Length is 49 feet; wing span 66 feet. The unusual design was the work of Dr. Richard Vogt.

Details and silhouettes of the plane were brought out of Germany and published in the British aviation journal, *The Aeroplane*, in a recent issue which has just reached here. Other new types for which detailed descriptions were made available include a new six-engine Blohm and Voss long-range transport plane and a new Messerschmitt two-seat long-range fighter-bomber that will carry 4,000 pounds of bombs.

Science News Letter, June 20, 1942

CHEMISTRY

Sugar Made from Sorghum By New Patented Method

A METHOD of getting as much sugar from sorghum as from average Louisiana cane, with valuable by-products as well, is the invention of Emil K. Ventre, of Baton Rouge, La., and Howard S. Paine of Chevy Chase, Md., for which U. S. patent 2,280,085 has been awarded. The inventors, both U. S. Department of Agriculture chemists, have assigned their rights to Claude R. Wickard, Secretary of Agriculture, without payment of royalties to themselves.

Syrup and a sweet silage has been obtained from sorghum for years, but the sugar contained could not be efficiently and economically crystallized out by the usual methods of boiling in a vacuum pan and then centrifuging, because of the formation of "gums."

These gums, the inventors found, were composed principally of starch and alkaline earth salts, the latter principally

calcium, with some magnesium. They made the syrup too viscous when boiled down. The inventors' process removes these impurities and recovers starch and calcium and aconitic acid as valuable byproducts. The syrup can then be easily reduced to sugar by the usual processes.

From a good quality of sorgho cane they obtained yields of raw and refined sugar equivalent to those from Louisiana sugar cane of similar quality. Each ton of sorghum gave 3.5 pounds of calcium aconitate, and 2.3 pounds of aconitic acid.

Sugar cane requires two years to mature and needs therefore a climate free from killing frosts in the winter. Sorghum, on the other hand, can be planted in the spring and harvested in the autumn. It grows over large sections of the country and does well in the dry areas. It could be used to replenish our sugar supplies.

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ENGINEERING

For Welding of Airplanes Special Technics Required

ARC WELDING of thin metal airplane parts is a delicate job requiring a technic quite different from that which applies to heavier parts, E. W. P. Smith, consulting engineer of the Lincoln Electric Co., of Cleveland, told the American Society of Mechanical Engineers aviation meeting in that city.

The electrodes must be smaller, current and voltage must be closely controlled and operators must be experienced in the work. Above all, there must be a thorough understanding of the properties of the metals employed and special adaptation in each case of the welding methods to the particular metal used.

The problem is complicated, Mr. Smith said, by the fact that the welded parts will be severely stressed, and the heat of the weld must not reduce the strength of the material nor interfere with the proper distribution of the load.

Much progress has been made in the art of welding metal sheeting and tubing as thin as 1/32 inch.

Two pieces of chromium-molybdenum steel can now be joined by a weld having a tensile strength after heat treatment of 125,000 to 160,000 pounds per square inch, which compares with the 200,000 pounds tensile strength of the original metal. Proper heat treatment nearly doubles the tensile strength of both the metal and the weld, Mr. Smith said.

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IN SCIENCE

AERONAUTICS

Movie in Chinese Made By U. S. Army

A MOVIE that talks in Chinese with a Jap fighter plane for villain is the U. S. Army's latest aid to battling Chinese troops.

It is a training film made to help the Chinese to distinguish friendly American and British aircraft from enemy planes. Chinese Embassy officials worked with the Army Signal Corps Photographic Laboratory in making the film.

Armies of the other American republics are also using U. S. Army training films with the dialogs in their own language, either Spanish or Portuguese.

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MEDICINE

B Vitamin Relieves Bad Headache Attacks

SUFFERERS from the devastating headache attacks of migraine, as well as those who have the dizzy spells, ringing in the ears and deafness of Meniere's disease, can be relieved of their troubles by doses of the pellagra-preventing B vitamin, nicotinic acid, Dr. Miles Atkinson of New York reported to the American Medical Association meeting in Atlantic City.

The nicotinic acid treatment works not because these people are suffering from hidden hunger for the vitamin but because most of them owe their trouble to constriction of blood vessels and nicotinic acid dilates blood vessels.

Meniere's disease, hitherto curable only by a nerve-cutting operation, and migraine, for which many remedies have been tried without universal success for any, are identical diseases so far as their cause is concerned, Dr. Atkinson declared.

The only difference, he believes, is that in Meniere's disease the spasmodic blood vessel contraction affects the labyrinth of the ear while in migraine the occipital lobe of the brain is affected. Many patients have migraine in their youth but as they get older the migraine turns into Meniere's disease, Dr. Atkinson said.

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THE FIELDS

PUBLIC HEALTH

TNT Is Found Toxic to Munition Plant Workers

TNT and the complex chemicals used in munitions may do damage in the peaceful factories where they are manufactured as well as when dropped or shot at the enemy.

The U. S. Public Health Service in a special bulletin, "The Aromatic Amino and Nitro Compounds, Their Toxicity and Potential Dangers," by W. F. Von Oettingen, tells what happens to the munitions worker who inhales these chemicals, absorbs them through his skin, or otherwise gets them into his system, and how he can be protected from such danger.

TNT is only one of a long list of those chemicals which start with aniline, famous dye chemical, and includes some well-known headache powders and anti-fever medicines.

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MEDICINE

All-Time Record Set By Royal American "Fat Lady"

THE FATTEST Fat Lady of all time was probably Mrs. Ruth G. Pontico, star of the Royal American traveling show, who died recently following surgical removal of a "fatty tumor" from her left thigh.

Credit for setting the out-size record of all time, horizontally speaking, was given Mrs. Pontico in a comparative anthropometric study by David P. Willoughby, of the California Institute of Technology, Pasadena (*Human Biology*).

Mrs. Pontico apparently did more with her height, 5 feet 5½ inches, than anyone else has ever achieved, tipping the scales at 800 pounds net. While there have been bigger people in the world, notably Miles Darden, the North Carolina giant who died in 1857 weighing a little over 1,000 pounds, Mr. Willoughby's index for height vs. weight gives Mrs. Pontico the championship.

The fattest Fat Lady "owed it all to the little woman," her mother, who

reached the 720-pound mark herself, while her father was a skinny fellow of six feet who weighed a mere 250.

Mrs. Pontico weighed 16 pounds at birth, which was no mean size for an infant, and as a toddler of a year old she was tipping the scales at 50 pounds.

You may think she had to eat a great deal to keep her strength up, but Mr. Willoughby explains that her actual intake was only about half again the normal amount. This, in proportion to her weight, is only a third as much as the average person eats. But of course, in her case, "everything she ate turned to fat."

In view of the new emotional and psychological theories of obesity, natural competition with her mother, also a professional fat lady, may have played some role. However, considering her birth weight, heredity certainly gave Mrs. Pontico a head start.

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MEDICINE

Babies Treated With 5-Day Syphilis Method

"VERY encouraging" results in treating babies born with syphilis by the intensive 5-day method now used successfully in grown-up syphilis patients were reported to the American Medical Association meeting in Atlantic City by Dr. I. Michael Levin, Dr. Samuel J. Hoffman, Dr. David S. Koransky, Dr. Irving B. Richter and Dr. Bernard Gumbiner, of Chicago.

The treatment, consisting of massive doses of an arsenic preparation, mapharsen, injected directly into the veins, was given to 36 babies and children, 12 of them less than ten weeks old. No deaths and no serious reaction to the poisonous effect of arsenic occurred. Blood tests showed that the four children with early syphilis were cured, or at least had negative instead of positive blood tests, within four to eight months. Blood tests became negative in seven of the 32 babies born with syphilis and possibly negative in another five.

Congenital syphilis produces widespread changes throughout the body and is more resistant to treatment than acquired syphilis, the Chicago doctors pointed out. Before babies are given this strenuous treatment they must show that they can take food and get along all right. The treatment should not be adopted for general use in syphilitic babies, the doctors cautioned, until it has been studied further.

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PUBLIC HEALTH

Respiratory Diseases May Spread Through the Air

THE CURRENT and revolutionary theory that colds, influenza and other respiratory diseases, which cause the most illness in any age group, may be spread through the air, rather than by direct contact with the infected person, is supported by detailed evidence in the current *Journal of the American Medical Association* (Feb. 28).

Three distinct lines of investigation are reported by Dr. Leon Buchbinder of the DeLamar Institute of Public Health of the Columbia University College of Physicians and Surgeons. These are the discovery of germs from the throat and mouth of humans in their indoor environment, means of identifying individual strains of streptococci bacilli, and development of several effective means to control respiratory infections on the theory that they are air-borne rather than spread by direct contact.

Most interesting perhaps are the means of control. There is suggestive evidence, Dr. Buchbinder reports, that the spread of contagious infections in children's hospitals and in operating rooms can be reduced by ultraviolet light. Similar results, though less supported by evidence, are obtained with chemical sprays.

Some time ago the contact theory seemed verified by the success of the so-called barrier method of nursing in contagious disease hospitals. However, the method did not entirely prevent spread of disease from bed to bed or ward to ward. Current success with ultraviolet light and spraying the air with chemicals seems now to indicate that disease organisms may be carried for some distance through the air without losing their vigor, and may perhaps be halted by the light or spray.

There have been several reports, Dr. Buchbinder points out, that the spread of chickenpox in institutions is slowed by ultraviolet light.

The air-borne theory of contagious disease is particularly interesting at present, he continues, because of the congregation of soldiers in Army camps.

One of the chemical "mists" used to halt air-borne infections is propylene glycol. Some researchers have found that a one part to two million dilution of propylene glycol vapor will completely protect mice against dilutions of influenza virus, usually fatal.

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PUBLIC HEALTH

Good Stomachs For War Assured By Induction Boards

Army Examinations Are Four to Five Times as Good For Revealing Ulcers as Life Insurance Examinations

STOMACH ULCERS which have been a cause of much disability in the British and Canadian armies are being effectively ruled out of the American army by present recruiting policies, according to figures revealed by Col. John L. Kantor, U. S. Army Medical Reserve, at the meeting of the American Medical Association in Atlantic City.

Examinations by the army induction boards are four to five times as efficient in revealing ulcers as the life insurance examinations of civil life, Col. Kantor declared. Local induction boards rejected men with ulcers at the rate of 4.4 per thousand and army induction boards have rejected them at the rate of 5.5 per thousand. Life insurance statistics give the rate of ulcers found in men under 35 years as only one per thousand.

Stomach ulcers rank high as a cause of disability for military service and are increasingly common in both military and civil life, Col. Kantor declared. They lead all other digestive diseases as a cause of discharge from the regular army.

Vaccinations against cholera, given to all soldiers likely to be sent to parts of the world where cholera exists, anti-typhoid vaccinations and careful attention to sanitation and good food are measures taken by the army to protect the American soldier from digestive diseases. In peace, these diseases ranked third as a cause of admission to sick report, third as cause of lost time and discharge for disability and fourth as cause of death.

World War I and Veterans Administration records "suggest" that of every nine soldiers with digestive disease in active service, three or four are likely to suffer permanent disability.

Facilities for treating the soldier who does get a digestive ailment are good, it appears from Col. Kantor's description of the number of stomach specialists in the army. Latest methods of diagnosing and treating stomach ailments, including the gastroscope which doctors

in civil life have only been using for a few years to look inside a patient's stomach, are available in army hospitals.

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Avoid Hurried Eating

A GREATER risk of getting stomach ulcer comes from eating hurriedly, overeating, eating when tired, worried or angry than from eating any particular kind of food, Dr. Russell S. Boles, of Philadelphia, declared.

Only persons of a certain type will

NUTRITION—ETHNOLOGY

Eating Dirt May Be Sign of Diet Deficiency

DIRT EATING, or clay eating, may be a sign of diet deficiency, not mental disease, it is revealed by a survey of school children in Oktibbeha County, Mississippi.

Dirt eaters are particular about what sort of soil they eat, and the evidence suggests that dirt eating may be due to a lack of iron in their diets.

Eating dirt is a fairly common practice in some parts of this country, particularly among Southern Negroes, according to the survey conducted by Drs. Dorothy Dickins and Robert N. Ford of Mississippi State College (*American Sociological Review*, February). Every adult Negro interviewed, as well as many white persons, had heard of the custom and some admitted practicing it.

"Reasons given for eating dirt," the investigators said, "were: it is good for you; tastes good, rather sour, like a lemon; helps women who are pregnant; and tastes especially good if smoked."

"The notion that people crave dirt is common. They get to the place where they feel they must have clay to eat. Clay from certain banks is termed especially good."

"One hears, too, that dirt is carried

"produce an ulcer," Dr. Boles stated. This type is characterized by instability of the autonomic nervous system, which acts without conscious control. In some of these people, "outward calm may hide inner chaos," he pointed out.

"As a rule these individuals have effectual energetic personalities and they live in a constant state of excitement, anxiety, fear or some other emotional ferment."

Dr. Boles' advice to ulcer-susceptible persons: Feel free to eat what agrees with you, but avoid eating it when tired or in a bad state of mind; generally speaking, alcohol and other irritants to the stomach should be used, if at all, in great moderation; tobacco should be restricted to not more than six cigarettes daily, and these should not be smoked on an empty stomach; rest after eating when possible and don't subject the nervous system to the effects of too great application of the mind and too little manual activity.

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long distances to people who can no longer get it themselves. Some claim that Negroes in the South send bags of dirt to Negroes who have migrated north. Negroes who now live in the Yazoo-Mississippi Delta are said to ask Negroes who live in the hills of Mississippi to send a bag of good dirt. Perhaps they acquired the habit when they, too, lived in the hills where clay was abundant. The dirt in the Delta is no good for eating."

The survey was undertaken as a result of disclosures at a meeting of the Food Habits Committee of the National Research Council.

The school children were given lists of iron-rich foods in which the words "clay" and "dirt" were included with mustard greens, molasses, beans, and so on, and asked to tell which foods they had eaten that day. At least a fourth were found to be dirt eaters. While dirt-eating was more frequent among those who consumed fewer iron-rich foods, the survey concludes that more information is necessary concerning quantities of these foods eaten, quantities of dirt eaten, and also the body's capacity to utilize iron.

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New Machines And Gadgets

Novel Things for Wartime Living

A new liquid plastic can be applied like paint to steel, wood, concrete and other surfaces and dries to a tough, impermeable, electrically insulating film that is resistant to acids and alkalis.

To replace flexible copper tubing, a new tubing is being made of soft annealed steel, coated inside and out with copper. Even the Army and Navy are using this tubing for fuel and oil lines and other purposes on tanks, jeeps, trucks, ambulances and motorcycles and wherever else solid copper tubing is not entirely essential.

Blackout ventilators are becoming essential equipment for air-raid shelters, for workrooms and factories where work must go on during a blackout with all doors and windows tightly sealed. A blackout ventilator is one so constructed that, while allowing free passage for air, it permits no light to leak out.

An electron microscope for the examination of opaque objects has just been patented. Hitherto, only transparent objects could be used because the electrons had to pass through the specimen to a fluorescent screen beyond. In the new instrument, the electrons just graze the surface of the specimen and are reflected from it at a very small angle and pass on to a fluorescent screen.

Black-enameled conduit for the protection of electric wires can in many instances be substituted for the more usual zinc-coated conduit, with consequent savings of thousands of pounds of zinc for vital war purposes. Experience has shown that this conduit, enameled on the inside, affords sufficient protection except when corrosive conditions are extreme.

● RADIO

Saturday, June 27, 1:30 p.m., EWT

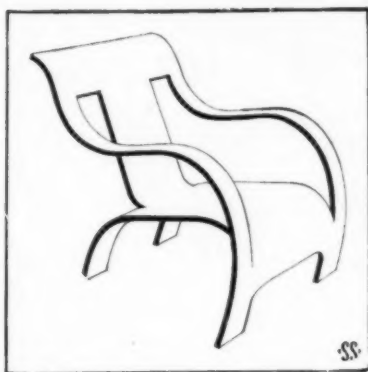
"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. J. P. Leake, of the U. S. Public Health Service, will discuss public health and infectious disease, particularly the one most prevalent during June.

Tuesday, June 23, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.



From Scandinavia comes this unique chair design shown in the illustration. It is made from a single sheet of plywood cut out and bent as shown. The only waste is the inverted U-shaped piece cut out to form the front legs. The bending is done by pressure and heat while the glue, usually a phenolic resin, is soft. After cooling, the shape is rigidly held.

A photoelectric "light watchman," for automatically switching off neon signs, show window lights, etc., the moment the street lights are extinguished for a blackout, is now available in a compact self-contained form easily installed. Further improvements over previous devices of the sort are that this instrument is highly directional so that it is affected only by the particular street light at which it is aimed. It is also unaffected by any momentary flickering of the street light, and if anything goes wrong with the instrument, the lights are turned off.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 109.

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PSYCHOLOGY

Answers Given to Child's Questions About War

FRANK, honest answers to his questions is one way of keeping the child from worry and fear about the war. Real answers that helped dispel the fears of a group of American children are given by Mrs. Mary Shattuck Fisher, chairman of the child study department of Vassar College and director of its nursery schools, in the *Journal of Home Economics*.

To the question, will New York be bombed, the answer was in part:

"Yes, New York may be bombed and it is important for us to be ready. We will build up defenses just as we have fire departments to protect us in case of fire."

The child's fear about air raids might

be relieved by an answer such as the following:

"Yes, air raids are dangerous, but so is city traffic. We will all learn how to obey the new rules, how to watch for the right signals, how to help protect each other."

If the child is frightened at the possibility of being evacuated to a safer but far away place, the answer is to explain that it is better for families to stay together, even in war, but that if he does go away for a while it will be like going to camp. Other children and probably his teacher will go along. It will not be too far for his parents to visit him occasionally.

Hardest to answer are the questions about Daddy who has gone away to war. Suggested answers are:

"No, we don't know how long Daddy will be gone. We are all trying to help win the war as soon as possible so he will come back soon."

"Yes, of course we hope Daddy will come back safe and we believe he will. Yes, some men will be killed on our side too, but that is what war means. When our country is attacked, men are proud to fight for their country."

Especially important is the reassurance in the following:

"No, you will not be alone. If Daddy doesn't come back I will still take care of you."

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MEDICINE

Persistent Hiccup Cured By Use of New Serum

A SERUM that will cure persistent epidemic hiccup and post-operative hiccup is claimed by Dr. Edward C. Rosenow, of the Mayo Foundation, at the meeting of the American Society of Clinical Pathologists.

Cause of such attacks of hiccups, in Dr. Rosenow's opinion, is a streptococcus germ normally found in people's throats and in the air, which somehow acquires power to produce spasms of the diaphragm.

The serum has so far been given to 90 patients whose hiccups has persisted from one to 21 days in acute attacks, and as long as two and four years in chronic form. The severity and number of spasms was reported reduced after one injection of serum in 20 out of 60 patients and the spasms ceased after the first injection in 14 out of the 60 cases reported in detail.

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MEDICINE

Concentrated Blood Plasma Most Effective for Shock

Because It Was Available for Immediate Treatment Of Hawaii Casualties, Deaths From Burns Were Low

BLOOD plasma is the most effective means for fighting shock in war wounded soldiers, sailors, or civilians, Dr. Virgil H. Moon, professor of pathology at Jefferson Medical College, declared before the American Society of Clinical Pathologists meeting in Philadelphia.

Even more useful, he added, is plasma which has been concentrated by evaporation to one-half or one-fourth of its original volume.

Blood plasma was available for the immediate treatment of those injured at Pearl Harbor and as a result, Dr. Moon said, the percentage of deaths among seriously wounded and burned victims was the lowest ever reported from similar casualties.

Plasma fights shock by drawing water from the body tissues into the blood, he explained. Ordinarily, the balance between water in the blood and that in the tissues is maintained by the action of the walls of very small blood vessels, called capillaries. These capillary walls are as thin and delicate as the wall of a soap-bubble.

When they get out of order the fluid part of the blood passes into the tissues, the total volume of blood is reduced and much of it becomes stagnant and out of circulation in the dilated capillaries and tiny veins in the organs of the body. As a result, not enough blood is returned to

the heart to keep blood flowing through the body.

The patient becomes weak, pale and restless. Functions of all body organs are decreased. The temperature falls, the pulse becomes feeble and rapid, the blood pressure, sinks and the condition closely resembles that which develops after serious hemorrhage. Dr. Moon quoted one authority as saying "The patient bleeds to death into his own capillaries."

If there has been extensive bleeding accompanied by shock, transfusions of

whole blood are most useful. If the blood is concentrated by loss of its plasma, however, transfusions are not effective and may even be harmful, Dr. Moon declared.

The soap-bubble-thin walls of the capillaries are very susceptible to the effects of various injurious agents and conditions. These include the poisons of bacteria, products of protein cleavage, extracts of normal tissues, abnormal metabolic products, various chemicals and poisons, and even moderate lack of oxygen. When affected by any of these, the capillaries dilate and their walls allow the plasma to leak out into the tissues.

Once a patient has gone into shock, the deficient circulation of blood causes a lack of oxygen which itself damages the capillaries and increases their dilatation and the leakage of plasma. This makes matters worse by keeping up, in a vicious circle, the conditions that lead to death if not promptly counteracted.

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PSYCHOLOGY

Propaganda Should Harmonize With Attitudes of the People

A MERICAN morale can be boosted to the point where victory is possible only if officials issuing government propaganda understand the attitudes of the American people, Dr. S. S. Sargent, of Barnard College, Columbia University, told the meeting of the Eastern Psychological Association in Providence.

Bombing raids, the attack on Pearl Harbor and other war events have a much greater effect on morale than any amount of propaganda, regardless of whether it is so labeled, Dr. Sargent emphasized, but nevertheless propaganda can be effective.

Here are some practical suggestions, based by Dr. Sargent on a poll of a sample population cross-section conducted this month:

1. Americans hate war. Any propaganda glorifying war would be unsuccessful; we should agree that war is a dirty business and we should hurry the victory all we can.

2. Americans do not believe that the end of the war will usher in the millennium. Propaganda which depicts the "parliament of man, the federation of the world" as the outcome of the present conflict is likely to be greeted with "oh, yeah," Dr. Sargent said.

3. Americans do not hate the German, Italian or Japanese people, but they do hate the Fascist-military regimes in power in those nations. Enemy aliens have not been mistreated here, nor have we banned Goethe or burned all our Japanese lanterns.

4. Americans do not believe their allies in this war are angels.

5. Americans doubt that every one is sacrificing alike in this war.

6. Americans do not believe their democracy is perfect.

7. Americans are suspicious of censorship and propaganda in their news. Censorship for military reasons is agreed upon, but omission or distortion of news for any other reason will prove destructive to morale, Dr. Sargent indicated.

The most effective sort of propaganda, he said, is the force of actual facts.

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Two ships a day are being launched by American shipyards.

"Jeeps," the quarter-ton reconnaissance cars of the Army, do good work in plowing, harrowing, and other farm operations, according to reports of a recent Department of Agriculture test.

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SCIENCE NEWS LETTER

1719 N St., N. W. Washington, D. C.

MEDICINE

Germ-Killer From Soil Effective for Wounds

A NEW chemical remedy against germs, expected to be particularly useful in treatment of war wounds, has now been tested on 90 patients in Philadelphia hospitals according to reports from Dr. Ellice McDonald, director of the Biochemical Research Laboratories at Newark, Del., and Dr. V. W. Murray Wright of Philadelphia.

The new chemical remedy, H-1, is extracted from germs that live in the ground. It has proved very effective against infections with germs in the gram-positive group, which are the ones found in 80% to 90% of wounds.

H-1 is a fine gray powder with the great advantage of being very efficient in high dilutions. It is prepared for use by dissolving in a small amount of alcohol and then diluting with water. The solution is colorless, thereby enabling the surgeon to observe the wound progress better. This would be of further value in war since a potentially large amount of the germicide could easily be transported in a small package by plane to distant combat areas.

In addition to its germ-killing effect, H-1 seems to stimulate healing. Many wounds and some skin grafts treated with it healed in a remarkably short time, Dr. Wright reported.

H-1 belongs in that rapidly growing group of remedies against germs which are extracted from microorganisms instead of being made in the chemical laboratory, as the sulfa drugs are. The germ-against-germ chemicals include gramicidin, which H-1 is somewhat like, tyrocidine, and penicillin. The latter substance is extracted from molds, whereas H-1 and gramicidin are extracted from bacilli that live in the earth.

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SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

INDIANAPOLIS, Ind.—Very few of us appreciate our neighbor's hobbies. The person who devotes his spare time to the rearing of tropical fish often is considered a crackpot by the one who collects stamps; both may be misunderstood by the one who builds model airplanes. However, all are brothers under the skin. In every case a mastery of a certain sort is essential before the hobbyist can become imbued with the bug. But when this happens the hobbyist is quick to explain the thrills he gets from his spare time activity. He hopefully displays his awards whether they be monetary prizes, silver cups or just a rare and unusual specimen.

The hobbyist's hope is that the spectators will be induced to share the benefits of a pet avocation.

It is for this reason that a hobby program is a "natural" for any club. Speakers are not difficult to obtain, audiences are thrilled and the hobbyists feel they have performed a noble service.

Interest in the hobbies of other people is pronounced among members of the Naturalists Club at the Emerich Manual Training High School. Not only does this club stage many hobby shows but the members also build scientific projects and demonstrate the use of member built apparatus. The sponsor is Robert L. Black, biology teacher.

BOALSBURG, Pa.—At every meeting of the Bunsen Burners Science Club at Harris Township High School, the members add to the collections of flowers, bugs, moths and butterflies. Being desirous of aiding in the war programs, the members also have taken up First Aid work. Occasional social gatherings permit the members to meet each other on a purely friendly basis. Mr. Freeley, principal, is the sponsor.

Clubs are invited to become affiliated with SCA for a nominal \$2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

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Confidence Rides With The Dawn Patrol

WHEN the bombers of the Atlantic Patrol thunder into the dawn, their pilots look ahead with confidence—confidence born of faith in their machines and the fuel that drives their motors. American fuels, like American planes, are built to bring back safely those who fly.

Somewhere, in an American refinery, one of America's great army of behind-the-scenes workers, with a Bausch & Lomb Refractometer, is doing his part in making American oils and gasolines so efficient and safely dependable. Modern refractometric methods of control speed refining operations and maintain a greater uniformity and higher quality than ever achieved before.

Here, again, optical science — with Bausch & Lomb instruments — is at work helping to strengthen America's front lines. Today, American manufacturers—like the nation's armed forces—turn to precision optical methods for critical analysis, precise measurement, quality control. Bausch & Lomb Contour Projectors, Metallographic Equipment and microscopes for inspection and control take their place alongside range finders, gun sights and binoculars in contributing to the vital needs of national war effort.

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MEDICINE

Haystack Chemical Remedy May Have Wide Usefulness

Dicoumarin, Which Reduces the Clotting Ability Of the Blood, May Be Used for Thrombosis

HOPE THAT the haystack chemical, dicoumarin, which reduces the clotting ability of the blood, may have wide usefulness as a life-saving remedy appeared in reports from two groups of scientists to the American Society for Clinical Investigation. Both stressed the fact, however, that it is too soon after dicoumarin's discovery to be sure of its exact value.

The scientists reporting on its use in cases of thrombosis (blood clot), diseases of the blood vessels including one kind of artery hardening, and subacute bacterial endocarditis (a form of heart disease) were Dr. Ovid O. Meyer and Dr. James B. Bingham, of the University of Wisconsin, and Dr. Irving S. Wright and Dr. Andrew Prandoni, of New York.

Dicoumarin, formed in the spoiling of sweet clover, was first isolated and then made synthetically without the haystack's aid by Prof. Karl Paul Link and associates at the University of Wisconsin. He had become interested in the problem because when cattle eat spoiled sweet clover their blood loses its ability to clot and slight bruises may cause fatal bleeding. Medical scientists immediately saw the possibility of using this chemical to prevent formation of frequently fatal blood clots which sometimes follow operations.

Success in preventing formation of clots in the large blood vessels of the legs after operation and in preventing a second clot on the lung in patients who

have already had one, have been reported by Dr. Edgar V. Allen and Dr. Nelson W. Barker, of the Mayo Clinic and the University of Minnesota.

Dicoumarin, it is emphasized by all the scientists, does not dissolve or cure a blood clot once it has formed, and in Dr. Meyer's opinion there is not yet enough evidence to say that it prevents clot formation.

It has also a dilating effect on the small blood vessels near the surface of the body and in the fingers and toes. This effect may be useful in cases where these small blood vessels are growing narrower because of disease such as artery hardening. It apparently acts to heal vascular ulcers through this dilating effect, Dr. Prandoni reported.

Chief disadvantage of dicoumarin is the danger of its causing severe bleeding. The chemical can be used safely, medical scientists believe, if the dose is carefully controlled and the patient is in the hospital having tests made frequently enough to detect the advent of dangerous bleeding.

Dicoumarin can be given by mouth as well as by hypodermic injection. This, with its cheapness, gives it an advantage over another anti-clotting chemical, heparin, obtained from animal tissues. Heparin acts immediately, however, whereas dicoumarin requires 24 hours to take effect.

The bleeding that may follow dicoumarin can be controlled by transfusions of fresh blood but not by the anti-

bleeding vitamin K. This and other evidence suggests that dicoumarin exerts its anti-clotting action on the blood in the liver.

Science News Letter, June 20, 1942

ENTOMOLOGY

Two New Insect-Fighting Chemicals Are Announced

WAR AGAINST man's hordes of insect foes can go on, with all-American munitions replacing war-scarce plant materials like pyrethrum and rotenone, and metals like copper and mercury. Two new insecticides, one of them deadly to fungi also, have been developed by scientists in the laboratories of E. I. du Pont de Nemours & Company. Neither insecticide requires use of imported materials.

One is made in part from that bane of gastronomically indiscreet small boys, castor oil. It is known chemically as isobutyl undecylene amide, but for convenience has been given the reference symbol IN-930. Although America's pre-war supply of castor oil was imported chiefly from Brazil, it is possible to raise castor beans in this country to meet the emergency.

Seeds, leaves and other parts of the castor bean contain an exceedingly poisonous substance, ricin, which has been suggested as an insecticide. However, it is so toxic to human beings and domestic animals that the du Pont chemists prefer not to use it in an insecticide intended for general distribution.

The other new means of repelling insect onsets has been found very effective in preventing Japanese beetles from feeding on foliage. It is also a good fungicide for use against such plant diseases as blue mold of tobacco, apple scab and rust, and brown rot of stone fruits. It has been tried out at experiment stations in Delaware, Connecticut and New York, with good success reported.

The only metal it contains is iron, which can be obtained from otherwise unusable scrap if necessary. For convenience, the chemists have coined a trade-name, Fermate, by taking the first and last syllables of its rather long technical designation, ferric dimethyl dithiocarbamate.

Science News Letter, June 20, 1942

Commercial onion growers are entirely at the mercy of amateur gardeners whose perennial onions, if left in the ground all winter, will each spring reinfect commercial beds with the mildew fungus.

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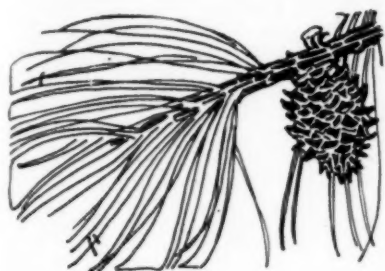
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New Insecticide

A NEW insect-killing chemical, derived from Southern pine, promises to increase American independence of war-pinch imports. The substance, discovered by chemists of the Hercules Powder Company in the course of research on turpentine and pine oil, can be substituted for pyrethrum and rotenone in fly-killing sprays used in homes and dairy barns. It is stated to be effective against such domestic pests as mosquitoes, roaches, moths, ants, mites, silverfish, bedbugs, centipedes and spiders.

Pyrethrum, at present the principal ingredient of insect sprays, was formerly practically a monopoly of Japan. Now it is produced on a large scale in the British African colony of Kenya, but lack of shipping has cut the supply. Rotenone, the other great fly-spray poison, comes from plants that grow in the East Indies and also in South America. But the Japs have the East Indies for the time being, and shipping lack again imposes restrictions on the South American supply. Promise of a large supply of home-made insecticide is therefore welcomed by spray manufacturers and users.

After trials on laboratory fly populations, the claim is made that the new material kills females as effectively as it does males. For some unknown reason, pyrethrum sprays have been chiefly effective against male flies. Obviously, a better kill of females is a great advantage.

Cost of the new insecticide is said to compare favorably with that of pyrethrum. Chemically, it is defined as the thiocynoacetate of a secondary terpene alcohol. For convenience, it has been given the trade name Thanite.

Experimental work with the killing agent in fly sprays has been carried on by a cooperative fellowship at the University of Delaware under the direction of Dr. L. A. Stearns, and in livestock sprays by the Kansas State College of

Agriculture under the joint direction of Dr. Roger C. Smith of the Entomology Department, and Dr. F. W. Atkeson and Dr. A. O. Shaw of the Dairy Husbandry Department.

Science News Letter, June 20, 1942

PHYSICS

Baseball Really Does Curve According to Measurements

All Pitches Called Curved Deviated From Straight Line, Some as Much as Six and a Half Inches

THAT a baseball really does curve and may deviate from a straight line much as $6\frac{1}{2}$ inches at the home plate appears from measurements made by Frank L. Verwiebe of Eastern Illinois State Teachers College, and reported in the *American Journal of Physics* (April).

These results run counter to the claims, made in "Life" magazine last September and supported by convincing pictures, that all "curves" are really straight and that the curves that many protested having seen are merely optical illusions.

The results also contradict the assertion in "Life" that if there is any curvature at all, it occurs in the first half of the pitch, the last half being perfectly straight. The measurements showed that most of the curving occurred during the last half, thus giving solid foundation for the "break" which so many insist they have seen.

The measurements were made in the same way that the path and the velocity of a bullet are determined. Four rectangular screens were set up between the pitcher and the home plate and one at the home plate. The five screens were crossed by vertical and horizontal threads, accurately spaced and aligned by a surveyor's transit. The position of the ball as it passed through each screen could be determined by the broken threads to within less than an inch.

One throw was intentionally straight, and the measurements showed that it really was straight. All pitches called as "curves" proved to be actually curved, the deviation from straight line travel varying from $2\frac{1}{2}$ to $6\frac{1}{2}$ inches as measured at the home plate. The outdrops deviated most, and are apparently the easiest curves to throw.

The speed of the ball was found to vary from 90 to 130 feet per second, requiring from one-half to two-fifths of

a second to travel the 50 feet from the pitcher to the batter's box. For a six-inch deviation, most of it occurring in the last fifth of a second, the ball must be traveling crosswise at two feet per second, which can easily give the batter the impression of a "break."

To cause a ball, launched horizontally at 130 feet per second, to rise requires that it be given enough spin to lift itself $7\frac{1}{2}$ inches, this being the distance it would fall during the flight by gravity. This is very difficult, says Mr. Verwiebe, although conceivably a Walter Johnson or a Bob Feller might give the ball a slight "hop."

He concludes that many peculiar effects reported about baseball curves are still unexplained.

Science News Letter, June 20, 1942

A ten foot *rock python* and a wild buffalo invaded an Australian army camp recently, when long grass in the surrounding area was burned off.

The north end of a sensitive *compass needle* follows the sun's path by diverging slightly to the east in the forenoon, to the west as the sun descends.

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•First Glances at New Books

NUTRITION

THE NATIONAL NUTRITION—Morris Fishbein—*Bobbs-Merrill*, 192 p., \$1.75. This authoritative book, written with a remarkable combination of forcefulness and moderation, will tell the average intelligent reader what it's all about when it comes to eating—why we are having a campaign for better eating in America, why the draft rejections do not mean we are a nation of physical weaklings, what to eat for good health and long life, where to get more information on this subject, what food follies to avoid.

Science News Letter, June 20, 1942

LIBRARY HISTORY

FORTRESS OF FREEDOM, The Story of the Library of Congress—Lucy Salananka—*Lippincott*, 445 p., illus., \$4. Beginning officially 140 years ago, but actually existing during days of the American revolution, the Library of Congress has grown to be the largest national library in the world. Its history makes stirring and interesting reading.

Science News Letter, June 20, 1942

PHYSICS

PHYSICS—Frank L. Robeson—*Macmillan*, 819 p., illus., \$4.50. A text that the teacher does not have to explain, which enables him to devote the class-room time to demonstrations, discussions, and the solution of problems. Historical sidelights are interspersed to make the text more palatable.

Science News Letter, June 20, 1942

CHEMISTRY

INTRODUCTION TO COLLEGE CHEMISTRY—William McPherson, William Edwards Henderson, W. Conard Fernelius and Laurence Larkin Quill—*Ginn*, 608 p., illus., \$3.50. Using water, air, the earth's crust and salt as springboards, the science of chemistry is developed. Close touch with practical life is further maintained by numerous applications, including such modern things as plastics and synthetic rubber. About a third of the book is devoted to a preview of organic chemistry.

Science News Letter, June 20, 1942

NUTRITION

SWEETS WITHOUT SUGAR—Marion White—*M. S. Mill*, 103 p., \$1.25. Over two hundred tested recipes using sugar substitutes, by an author who spent ten years managing the Cooking Institute for a national magazine.

Science News Letter, June 20, 1942

● Just Off the Press ●

ADAPTIVE MODIFICATION FOR TREE-TRUNK FORAGING IN BIRDS—Frank Richardson—*Univ. of Calif. Press*, 51 p., 75c.

AIRCRAFT ENGINE AND METAL FINISHES—Myron A. Coler—*Pitman*, 128 p., illus., \$1.50.

AMERICAN PLANNING AND CIVIC ANNUAL, 1941—Harlean James, ed.—*American Planning and Civic Association*, 292 p., \$3.

ANNUAL REPORT OF THE DIRECTOR TO THE BOARD OF TRUSTEES FOR THE YEAR 1941—*Field Museum of Natural History*, 152 p., illus., \$1.

A COMPILATION OF THE VITAMIN VALUES OF FOODS IN RELATION TO PROCESSING AND OTHER VARIANTS—Lela E. Booher, Eva R. Hartzler and Elizabeth M. Hewston—*Govt. Print. Off.*, 244 p., 25c.

THE CREATIVE UNCONSCIOUS, Studies in the Psychoanalysis of Art—Hanns Sachs—*Sci-Art Publishers*, 240 p., \$2.75.

DISTRIBUTION AND VARIATION OF THE HORNED LARKS (OTOCORIS ALPESTRIS) OF WESTERN NORTH AMERICA—William H. Behle—*Univ. of Calif. Press*, 111 p., \$1.25.

ENDEAVOR, Vol. 1, No. 1, January, 1942—*Imperial Chemical Industries, London, S. W. 1, England*, quarterly, 5 shillings per copy.

FIELD INSPECTOR'S CHECK LIST FOR BUILDING CONSTRUCTION—U. S. National Bureau of Standards—*Govt. Print. Off.*, 68 p., 20c.

FIFTH CONTRIBUTION TO NOMENCLATURE OF CAMBRIAN FOSSILS—Charles E. Resser—*Smithsonian Institution*, 58 p., 30c. (Miscellaneous Collections, Vol. 101, No. 15)

HELP YOUR DOCTOR TO HELP YOU WHEN YOU HAVE CONSTIPATION, 59 p.; HEART DISEASE, 47 p.; HIGH BLOOD PRESSURE, 25 p.; INSOMNIA, 29 p.—Walter C. Alvarez and others, editors—*Harper*, 95c each.

INDEX TO THE LITERATURE OF SIPHONAPTERA OF NORTH AMERICA—Wm. L. Jellison and Newell E. Good—*Govt. Print. Off.*, 193 p., 25c.

INTRODUCTION TO THE MICROTECHNIQUE OF INORGANIC ANALYSIS—A. A. Benedetti-Pichler—*Wiley*, 302 p., \$3.50.

INTRODUCTORY COLLEGE CHEMISTRY, A Course for Beginners (2d ed.)—Horace G. Deming and B. Clifford Hendricks—*Wiley*, 521 p., illus., \$3.

LIFE HISTORIES OF NORTH AMERICAN FLY-CATCHERS, LARKS, SWALLOWS, AND THEIR ALLIES, Order Passeriformes—Arthur Cleveland Bent—*Govt. Print. Off.*, 555 p., illus., \$1.

THE NATURAL HISTORY AND CLASSIFICATION OF THE MOUNT LYELL SALAMANDER, HYDROMANTES PLATYCEPHALUS—Lowell Adams—*Univ. of Calif. Press*, 24 p., illus., 35c.

RATIONED RUBBER, What To Do About It—Williams Haynes and Ernst A. Hauser—*Knopf*, 181 p., \$1.75.

RESTAURANT PROFITS AND MANAGEMENT METHODS—J. O. Dahl—*The Dahls, Stamford, Conn.*, 753 p., \$3.

A TEXTBOOK OF BACTERIOLOGY (3d ed.)—Thurman B. Rice—*Saunders*, 560 p., illus., \$5.

A TEXTBOOK OF HISTOLOGY (4th ed.)—Alexander A. Maximow and William Bloom—*Saunders*, 695 p., illus., \$7.

YOU DON'T HAVE TO EXERCISE! Rest Begins at Forty—Peter J. Steincrohm—*Doubleday, Doran*, 207 p., \$1.50.

PHOTOGRAPHY

FLASH IN MODERN PHOTOGRAPHY—William Mortensen—*Camera Craft*, 208 p., illus., \$4. The flash bulb, tool of the news photographer, can also be employed effectively by the pictorial photographer. This book tells how, and provides much of the technical information needed.

Science News Letter, June 20, 1942

ANIMAL HUSBANDRY

AMERICAN DAIRY CATTLE, Their Past and Future—E. Parmelee Prentice—*Harper*, 453 p., color illus., \$3. Although American dairy cattle keep the names of their European ancestors—Jersey, Guernsey, Holstein—they have developed into strains distinctively American.

Science News Letter, June 20, 1942

GEOGRAPHY

THE PACIFIC NORTHWEST, A Regional, Human, and Economic Survey of Resources and Development—Ed. by Otis W. Freeman and Howard H. Martin—*Wiley*, 542 p., illus., \$4. A symposium by an impressive array of specialists in geography, geology, anthropology, economics and other pertinent fields, that undertakes to tell the story of a highly important region and its resources more completely than it has ever been told before.

Science News Letter, June 20, 1942

BIOLOGY

THE RAT IN LABORATORY INVESTIGATION, by a Staff of Thirty Contributors—John Q. Griffith, Jr. and Edmond J. Farris, eds.—*Lippincott*, 488 p., illus., \$7.50. A valuable book for scientists, students and others working with the rat in laboratory experiments. Gives technics and procedures which have proved satisfactory at the Wistar Institute and other institutions.

Science News Letter, June 20, 1942

NUTRITION

FOOD VALUES IN SHARES AND WEIGHTS—Clara Mae Taylor—*Macmillan*, 92 p., \$1.50.

Science News Letter, June 20, 1942

ANATOMY

NEURAL MECHANISMS IN POLIOMYELITIS—Howard A. Howe and David Bodian—*Commonwealth Fund*, 234 p., illus., \$3.50.

Science News Letter, June 20, 1942

MEDICINE

MODERN MEDICINE, Its Progress and Opportunities—Netta W. Wilson and S. A. Weisman—*Stewart*, 218 p., \$2.

Science News Letter, June 20, 1942